



Document #12
Standard Friction Ridge Automation Training
(Latent/Tenprint)

1. Preamble

- 1.1. Prior to automation training, friction ridge examiners must possess the knowledge, skills and ability to recognize identifiable friction ridge detail.
- 1.2. This standard addresses the minimum training required for examiners working with friction ridge automation technology. Examiners shall receive training that provides the necessary skills and ability to operate friction ridge automation technology. The examiner must demonstrate knowledge of required objectives by passing written tests or practical exercises and by communicating an understanding of the objectives and underlying principles.
- 1.3. The following are required learning objectives.

2. History of Automation Technology and Theory of Operation

- 2.1. History of the development of friction ridge automation technology.
- 2.2. Theory of the operation of friction ridge automation technology.
 - 2.2.1. Distortion that may occur when three-dimensional friction ridge skin is captured as a two-dimensional image.

3. Function and Use of Image Capture

- 3.1. Types of friction ridge recordings (e.g., rolled, flat, simultaneous, and palm impressions).
- 3.2. Methods of friction ridge capture (e.g., ink and livescan).
- 3.3. Types of capture devices (e.g., live-scan, flatbed, and camera).
- 3.4. Point of capture variables (e.g., condition of fingers, condition of platen, rolling speed, and movement).
- 3.5. Control measures needed to achieve quality friction ridge images (e.g., scan resolution, compression rate, equipment maintenance, and calibration).
- 3.6. Procedures for addressing amputations, temporary injuries, skin conditions, rescans.
- 3.7. Individual agency livescan operator training policies.

4. Function and Use of Automated Fingerprint Identification System (AFIS)

- 4.1. The term AFIS as used herein includes automated systems for any friction ridge area.

Document #12 Standard Friction Ridge Automation Training, Ver. 2.0	Date of First Issue 05/08/09	Current Issue Date 11/14/12 Web Posting Date 11/24/12
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- 4.2. AFIS processes related to acquisition, classification, searching, storage, retrieval, identification, and final reporting of friction ridge records.
- 4.3. Friction ridge search criteria (e.g., designated finger search, how many fingers, and palm areas).
- 4.4. The importance quality assurance has on maintaining the integrity of friction ridge data.
- 4.5. Quality controls, which ensure completeness, image quality, and data integrity.
- 4.6. Individual agency's system, component maintenance, and calibration policies.
- 4.7. System requirements and limitations including text data fields, fingerprint or palmprint (image) quality, finger sequence and image replacement, image rotation, and tolerance for pattern interpretation.
- 4.8. Minutiae recognition, placement, rotation, ridge counts, and other minutiae factors related to searching and matching.
- 4.9. Limitations of system interoperability.
- 4.10. Integration of friction ridge image, mugshot, scars, marks, tattoos, minutiae, and other biometrics, as well as personal descriptors and criminal history information.
- 4.11. Search parameters, pattern classification and referencing, minutiae extraction, search algorithms, significance in the range of candidate scores, threshold scoring, candidate list comparison, and matching.
- 4.12. AFIS search capabilities in regards to latent print versus tenprint, tenprint versus latent print, latent print versus latent print, tenprint versus tenprint, and palmprint versus palmprint.
- 4.13. "Lights out" processing of searches (e.g., mobile search capabilities).
- 4.14. Logical search progression (i.e., local AFIS first, then state, regional, national, and international).
- 4.15. Filtering criteria used to establish logical candidates (e.g., finger position, sex, classification, race, offense, and geographic location).
- 4.16. Search result contents (e.g., ranked order, unique identifier, and finger or palm position).
- 4.17. Differences between AFIS digital images and original friction ridge impressions (e.g., potential loss of quality due to compression of image, monitor resolution, and capture resolution).
- 4.18. Printer technology limitations versus examinations from original friction ridge documents (e.g., paper quality and inked fingerprint cards).
- 4.19. AFIS processes related to latent print searches.
 - 4.19.1. Various search options among databases within a system (e.g., image and feature).
 - 4.19.2. Manual and automatic encoding of minutiae.
 - 4.19.3. File penetration benefits and liabilities of partial versus full database searches.
 - 4.19.4. Record authentication processes (e.g., correct association of name, unique identifier, friction ridge images, and criminal history record).

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5. Revision Table

Version	Effective Start	Effective End	Posted	Archived	Change
1.0	05/08/09	11/14/12	07/27/09	11/14/12	Original issue
2.0	11/14/12	N/A	11/24/12	N/A	No change to content Reformatted (start of new version number)

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